

What is claimed is:

1. In a communication network having a plurality of nodes, which transmit, receive or transfer communicated information, and a plurality of links, which connect the plurality of nodes to each other, a traffic information collecting device, which is provided in at least one of the plurality of nodes, for collecting traffic information all or some of the plurality of links, comprising:
- 10 a traffic information collecting unit for collecting first traffic information of a first link connected to an own node among the plurality of links;
- 15 a traffic information transmitting unit for transmitting, to the other nodes, said first traffic information collected by said traffic information collecting unit, using a message prescribed in a communication protocol in the communication network;
- 20 a traffic information receiving unit for receiving second traffic information of second links connected to the other nodes among the plurality of links, said second traffic information being transmitted from the other nodes; and
- a traffic information storage for storing said first and second traffic information.
- 25 2. The traffic information collecting device according to claim 1, wherein said traffic information transmitting unit transmits the first traffic information at

predetermined fixed time intervals.

3. The traffic information collecting device according to claim 1, wherein said traffic information 5 transmitting unit transmits the first traffic information when said traffic information receiving unit receives the second traffic information.

4. The traffic information collecting device 10 according to claim 1, wherein said traffic information transmitting unit transmits the first traffic information at predetermined fixed time intervals, as well as when said traffic information receiving unit receives the second traffic information.

15 5. The traffic information collecting device according to claim 1, further comprising:

a traffic information transferring unit for transferring the second traffic information received by said traffic 20 information receiving unit to the other first links excluding the received first link.

6. The traffic information collecting device according to claim 1, wherein said first and second traffic 25 information is traffic information of a link for outputting the traffic.

7. The traffic information collecting device according to claim 1, wherein said traffic information collecting unit collects the first traffic information at predetermined fixed time intervals.

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8. The traffic information collecting device according to claim 1, wherein said first and second traffic information, respectively, includes an average usage rate of the first and second links, the number of a packet discarded in the first and second links, and a bandwidth of the first and second link; and in the case where a logical link is provided in the first and second link, an average usage rate of the logical link, the number of a packet discarded in the logical link, and a bandwidth of the logical link.

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9. The traffic information collecting device according to claim 1, wherein said message in the communication protocol is an opaque link state advertisement in the OSPF protocol.

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10. The traffic information collecting device according to claim 1, wherein said node is a router.

11. The traffic information collecting device according to claim 1, wherein the node having the traffic information collecting device is a node for controlling a load sharing of the traffic in the communication network.

12. The traffic information collecting device according to claim 1, wherein said traffic information storage comprises a hash table and structure data having the fist or
5 second traffic information of the respective nodes,

said hash table having a memory cell, said memory cell being addressed by a hash value obtained by hashing information for identifying the respective nodes, and storing a pointer to the structure data having the first or second traffic
10 information of the node in correspondence to the hash value of the memory cell, and

said structure data having a pointer to another structure data when there is another structure data in correspondence to the same hash value.

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13. The traffic information collecting device according to claim 1, wherein in the case where the first or second traffic information of the same node have already existed in said traffic storage when the first or second traffic
20 information is stored in same, said traffic information storage stores the first or second traffic information which is later temporally among them.

14. In a communication network having a plurality of
25 nodes, which transmit, receive or transfer communicated information, and a plurality of links, which connect the plurality of nodes to each other, a traffic information

collecting device, which is provided in at least one of the plurality of nodes, for collecting traffic information all or some of the plurality of links, comprising:

a traffic information collecting unit for collecting
5 first traffic information of a first link connected to an own node among the plurality of links; and

a traffic information storage for storing said first traffic information collected by the traffic information collecting unit, and second traffic information of second links
10 connected to the other nodes among the plurality of links, said second traffic information being transmitted from the other nodes.

15. A node in a communication network having a plurality of nodes for transmitting, receiving or transferring communicated information, and a plurality of links for connecting the plurality of nodes to each other, comprising:
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a traffic information collecting unit for collecting first traffic information of a first link connected to an own node among the plurality of links;

a traffic information transmitting unit for transmitting, to the other nodes, said first traffic information collected by said traffic information collecting unit, using a message prescribed in a communication protocol in the communication
25 network;

a traffic information receiving unit for receiving second traffic information of second links connected to the other nodes

among the plurality of links, said second traffic information being transmitted from the other nodes; and

a traffic information storage for storing said first and second traffic information.

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16. A node in a communication network having a plurality of nodes for transmitting, receiving or transferring communicated information, and a plurality of links for connecting the plurality of nodes to each other, comprising:

10 a traffic information collecting unit for collecting first traffic information of a first link connected to an own node among the plurality of links; and

15 a traffic information storage for storing said traffic information collected by the traffic information collecting unit and second traffic information of second links connected to the other nodes among the plurality of links, said second traffic information being transmitted from the other nodes.

17. In a communication network having a plurality of nodes for transmitting, receiving or transferring communicated information, and a plurality of links for connecting the plurality of nodes to each other, a traffic information collecting method for collecting traffic information of all or some of the plurality of links, and performed by at least one of the plurality of nodes, comprising the steps of:

collecting first traffic information of a first link connected to an own node among the plurality of links;

transmitting, to the other nodes, said first traffic information, using a message prescribed in a communication protocol in the communication network;

receiving second traffic information of second links

5 connected to the other nodes among the plurality of links, said second traffic information being transmitted from the other nodes; and

storing said first and second traffic information in a storage provided in the node.

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18. In a communication network having a plurality of nodes for transmitting, receiving or transferring communicated information, and a plurality of links for connecting the plurality of nodes to each other, a traffic information collecting method for collecting traffic information of all or some of the plurality of links, and performed by at least one of the plurality of nodes, comprising the steps of:

collecting first traffic information of a first link connected to an own node among the plurality of links; and

20 storing, in a storage provided in the node, said first traffic information, and second traffic information of second links connected to the other nodes among the plurality of links, said second traffic information being transmitted from the other nodes.

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19. In a communication network having a plurality of nodes for transmitting, receiving or transferring communicated

information, and a plurality of links for connecting the plurality of nodes to each other, a traffic information collecting program product for collecting traffic information of all or some of the plurality links, and executed by at least

5 one of the plurality of nodes, comprising:

a collecting process for collecting first traffic information of a link connected to an own node among the plurality of links;

a transmitting process of transmitting, to the other
10 nodes, said first traffic information, using a message prescribed in a communication protocol in the communication network;

a receiving process for receiving second traffic information of second link connected to the other nodes among
15 the plurality of links, said second traffic information being transmitted from the other nodes; and

a storing process for storing said first and second traffic information in a storage provided in the node.

20. In a communication network having a plurality of nodes for transmitting, receiving or transferring communicated information, and a plurality of links for connecting the plurality of nodes to each other, a traffic information collecting program product for collecting traffic information of all or some of the links, and executed by at least one of
25 the plurality of nodes, comprising:

a collecting process for collecting first traffic

information of a first link connected to an own node among the plurality of links; and

a storing process for storing, in a storage provided in the node, said first traffic information, and second traffic information of second links connected to the other nodes among a plurality of links, said second traffic information being transmitted from the other nodes.